CLAIMS

1. A solvent-free, hot melt adhesive composition suitable for bonding a polar leather layer to a non-polar substrate, comprising:

(a) a block copolymer having at least one A block and at least one B block, wherein:

(i) each A block is a mono alkenyl arene polymer block and each B block is a controlled distribution copolymer block of at least one conjugated diene and at least one mono alkenyl arene;

(ii) each A block having an average molecular weight between about 3,000 and about 60,000 and each B block having an average molecular weight between about 30,000 and about 300,000;

(iii) each B block comprises terminal regions adjacent to the A block that are rich in conjugated diene units and one or more regions not adjacent to the A blocks that are rich in mono alkenyl arene units;

(iv)the total amount of mono alkenyl arene in the block copolymer is about 20 percent weight to about 80 percent weight; and

(v) the weight percent of mono alkenyl arene in each B block is between about 10 percent and about 75 percent;

(b) a hydrogenated hydrocarbon tackifying resin, with a softening point lower than 140°C, preferably lower than 100°C and more preferably lower than 90°C, in a weight proportion of 30 to 150 parts by weight of tackifying resin per 100 parts per weight of block copolymer and preferably from 50 to 120 parts by weight per 100 parts by weight of block copolymer;

(c) a resin which is compatible with the mono alkenyl arene blocks, having a softening point lower than 140°C and preferably lower than 110°C, in a weight proportion of from 10 to 80 parts by weight and preferably from 20 to 60 parts by weight of resin per 100 parts by weight of block copolymer;

(d) optionally a melt flow improving poly(alkylene) resin, which is functionalized, in a weight proportion of from 0 to 30 parts by weight, and preferably from 5 to 20 parts by weight per 100 parts by weight of block copolymer, and

(e) stabilizers and/or additional auxiliaries in a weight

proportion of from 0.1 to 1 part by weight per 100 parts by weight of block copolymer.

2. The solvent-free, hot melt adhesive composition of claim 1 wherein in the block copolymer (a) mono alkenyl arene is styrene and the conjugated diene is isoprene, butadiene, or a mixture thereof.

3. The solvent-free, hot melt adhesive composition of claim 1 or 2 wherein in the block copolymer (a) the conjugated diene is butadiene and wherein 20 to 80 mol percent of the condensed butadiene units in block B have 1,2-configuration.

4. The solvent-free, hot melt adhesive composition of any one of claims 1-3 wherein in the block copolymer (a) the styrene blockiness index of the block B is less than 40 percent, said styrene blockiness index being the proportion of styrene units in the block B having two styrene neighbors on the polymer chain.

7. The solvent-free, hot melt adhesive composition of any one of claims 1-6 wherein the block copolymer (a) has the general configuration A-B, A-B-A, (A-B)n, (A-B)n-A, (A-B-A)nX, or (A-B)nX, wherein n is an integer from 2 to 30, preferably from 2 to 6, X is coupling agent residue and wherein A and B have the meaning defined hereinbefore.

8. The solvent-free, hot melt adhesive composition of any one of claims 1-7 wherein the block copolymer (a) has a Young's modulus below 25% elongation of less than 2,800 psi (20 MPa) and having a rubber modulus or slope between 100 and 300% elongation of greater than 70 psi (0.5 MPa).

9. The solvent-free, hot melt adhesive composition of any one of claims 1-8 wherein component (b) comprises hydrogenated rosin esters and preferably diglycerol esters or pentaerythritol esters of hydrogenated rosin, or hydrogenated hydrocarbon resin, and is present in a weight proportion of from 50 to 120 parts by weight resin per 100 parts by weight of block copolymer.

10. The solvent-free, hot melt composition of any one of claims 1-9 wherein component (c) comprises an aromatic hydrocarbon resin.

11. The solvent-free, hot melt composition of claim 10 wherein component (c) comprises at least one of coumarone-indene resins,

poly(alpha-methyl-styrene) resins, poly styrene resins, and vinyl toluene-(alpha-methyl-styrene) copolymers.

12. Use of the solvent-free, hot melt adhesive composition of any one of claims according to claims 1-11 for bonding a polar leather layer to a non-polar substrate.

13. Use according to claim 12 for bonding polar leather shoe uppers to non-polar polymeric material soles.

14. Use according to claim 13 for bonding polar leather shoe uppers to shoe soles or midsoles that are made from vinylarene/conjugated diene block copolymers, hydrogenated vinylarene/conjugated diene block copolymers, vinylarene/conjugated diene random copolymers, natural rubbers, poly(vinylarene), polyolefin, EVA copolymer, and/or mixtures thereof, optionally in admixture with oils and other auxiliaries.

15. Leather articles, composed of a polar leather component and a non-polar substrate, which are bonded to each other by the solvent-free, hot melt adhesive compositions of any one of claims 1-11.

16. Process for bonding a polar leather layer to a non-polar substrate, by using the solvent-free, hot melt adhesive compositions of any one of claims 1-11.